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THE PHILOSOPHY OF LOGICAL ATOMISM.

III. ATOMIC AND MOLECULAR PROPOSITIONS.

I DID not quite finish last time the syllabus that I intended for Lecture II, so I must first do that.

I had been speaking at the end of my last lecture on the subject of the self-subsistence of particulars, how each particular has its being independently of any other and does not depend upon anything else for the logical possibility of its existence. I compared particulars with the old conception of substance, that is to say, they have the quality of self-subsistence that used to belong to substance, but not the quality of persistence through time. A particular, as a rule, is apt to last for a very short time indeed, not an instant but a very short time. In that respect particulars differ from the old substances but in their logical position they do not. There is, as you know, a logical theory which is quite opposed to that view, a logical theory according to which, if you really understood any one thing, you would understand everything. I think that rests upon a certain confusion of ideas. When you have acquaintance with a particular, you understand that particular itself quite fully, independently of the fact that there are a great many propositions about it that you do not know, but propositions concerning the particular are not necessary to be known in order that you may know what the particular itself is. It is rather the other way round. In order to understand a proposition in which the name of a particular occurs, you

must already be acquainted with that particular. The acquaintance with the simpler is presupposed in the understanding of the more complex, but the logic that I should wish to combat maintains that in order thoroughly to know any one thing, you must know all its relations and all its qualities, all the propositions in fact in which that thing is mentioned; and you deduce of course from that that the world is an interdependent whole. It is on a basis of that sort that the logic of monism develops. Generally one supports this theory by talking about the "nature" of a thing, assuming that a thing has something which you call its "nature" which is generally elaborately confounded and distinguished from the thing, so that you can get a comfortable see-saw which enables you to deduce whichever results suit the moment. The "nature" of the thing would come to mean all the true propositions in which the thing is mentioned. Of course it is clear that since everything has relations to everything else, you cannot know all the facts of which a thing is a constituent without having some knowledge of everything in the universe. When you realize that what one calls "knowing a particular" merely means acquaintance with that particular and is presupposed in the understanding of any proposition in which that particular is mentioned, I think you also realize that you cannot take the view that the understanding of the name of the particular presupposes knowledge of all the propositions concerning that particular.

I should like to say about understanding, that that phrase is often used mistakenly. People speak of "understanding the universe" and so on. But, of course, the only thing you can really understand (in the strict sense of the word) is a symbol, and to understand a symbol is to know what it stands for.

I pass on from particulars to predicates and relations and what we mean by understanding the words that we use

for predicates and relations. A very great deal of what I am saying in this course of lectures consists of ideas which I derived from my friend Wittgenstein. But I have had no opportunity of knowing how far his ideas have changed since August 1914, nor whether he is alive or dead, so I cannot make any one but myself responsible for them.

Understanding a predicate is quite a different thing from understanding a name. By a predicate, as you know, I mean the word that is used to designate a quality such as red, white, square, round, and the understanding of a word like that involves a different kind of act of mind from that which is involved in understanding a name. To understand a name you must be acquainted with the particular of which it is a name, and you must know that it is the name of that particular. You do not, that is to say, have any suggestion of the form of a proposition, whereas in understanding a predicate you do. To understand "red," for instance, is to understand what is meant by saying that a thing is red. You have to bring in the form of a proposition. You do not have to know, concerning any particular "this," that "This is red" but you have to know what is the meaning of saying that anything is red. You have to understand what one would call "being red." The importance of that is in connection with the theory of types, which I shall come to later on. It is in the fact that a predicate can never occur except as a predicate. When it seems to occur as a subject, the phrase wants amplifying and explaining, unless, of course, you are talking about the word itself. You may say "'Red' is a predicate," but then you must have "red" in inverted commas because you are talking about the word "red." When you understand "red" it means that you understand propositions of the form that " x is red." So that the understanding of a predicate is something a little more complicated than the understanding

of a name, just because of that. Exactly the same applies to relations, and in fact all those things that are not particulars. Take, e. g., "before" in " x is before y ": you understand "before" when you understand what that would mean if x and y were given. I do not mean you know whether it is true, but you understand the proposition. Here again the same thing applies. A relation can never occur except as a relation, never as a subject. You will always have to put in hypothetical terms, if not real ones, such as "If I say that x is before y , I assert a relation between x and y ." It is in this way that you will have to expand such a statement as "'Before' is a relation" in order to get its meaning.

The different sorts of words, in fact, have different sorts of uses and must be kept always to the right use and not to the wrong use, and it is fallacies arising from putting symbols to wrong uses that lead to the contradictions concerned with types.

There is just one more point before I leave the subjects I meant to have dealt with last time, and that is a point which came up in discussion at the conclusion of the last lecture, namely, that if you like you can get a formal reduction of (say) monadic relations to dyadic, or of dyadic to triadic, or of all the relations below a certain order to all above that order, but the converse deduction is not possible. Suppose one takes, for example, "red." One says, "This is red," "That is red," and so forth. Now, if any one is of opinion that there is reason to try to get on without subject-predicate propositions, all that is necessary is to take some standard red thing and have a relation which one might call "color-likeness," sameness of color, which would be a direct relation, not consisting in having a certain color. You can then define the things which are red, as all the things that have color-likeness to this standard thing. That is practically the treatment that Berkeley and Hume recom-

mended, except that they did not recognize that they were reducing qualities to relations, but thought they were getting rid of "abstract ideas" altogether. You can perfectly well do in that way a formal reduction of predicates to relations. There is no objection to that either empirically or logically. If you think it is worth while you can proceed in exactly the same way with dyadic relations, which you can reduce to triadic. Royce used to have a great affection for that process. For some reason he always liked triadic relations better than dyadic ones; he illustrated his preference in his contributions to mathematical logic and the principles of geometry.

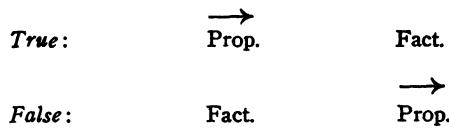
All that is possible. I do not myself see any particular point in doing it as soon as you have realized that it is possible. I see no particular reason to suppose that the simplest relations that occur in the world are (say) of order n , but there is no *a priori* reason against it. The converse reduction, on the other hand, is quite impossible except in certain special cases where the relation has some special properties. For example, dyadic relations can be reduced to sameness of predicate when they are symmetrical and transitive. Thus, e. g., the relation of color-likeness will have the property that if A has exact color-likeness with B and B with C, then A has exact color-likeness with C; and if A has it with B, B has it with A. But the case is otherwise with asymmetrical relations.

Take for an example "A is greater than B." It is obvious that "A is greater than B" does not consist in A and B having a common predicate, for if it did it would require that B should also be greater than A. It is also obvious that it does not consist merely in their having different predicates, because if A has a different predicate from B, B has a different predicate from A, so that in either case, whether of sameness or difference of predicate, you get a symmetrical relation. For instance, if A is of a different

color from B, B is of a different color from A. Therefore when you get symmetrical relations, you have relations which it is formally impossible to reduce to either sameness of predicate or difference of predicate, but when you come to asymmetrical relations there is no such possibility. This impossibility of reducing dyadic relations to sameness or difference of predicate is a matter of a good deal of importance in connection with traditional philosophy, because a great deal of traditional philosophy depends upon the assumption that every proposition really is of the subject-predicate form, and that is certainly not the case. That theory dominates a great part of traditional metaphysics and the old idea of substance and a good deal of the theory of the Absolute, so that that sort of logical outlook which had its imagination dominated by the theory that you could always express a proposition in a subject-predicate form has had a very great deal of influence upon traditional metaphysics.

That is the end of what I ought to have said last time, and I come on now to the proper topic of to-day's lecture, that is *molecular* propositions. I call them molecular propositions because they contain other propositions which you may call their atoms, and by molecular propositions I mean propositions having such words as "or," "if," "and," and so forth. If I say, "Either to-day is Tuesday, or we have all made a mistake in being here," that is the sort of proposition that I mean that is molecular. Or if I say, "If it rains, I shall bring my umbrella," that again is a molecular proposition because it contains the two parts "It rains" and "I shall bring my umbrella." If I say, "It did rain and I did bring my umbrella," that again is a molecular proposition. Or if I say, "The supposition of its raining is incompatible with the supposition of my not bringing my umbrella," that again is a molecular proposition. There are various propositions of that sort, which you can com-

plicate *ad infinitum*. They are built up out of propositions related by such words as "or," "if," "and," and so on. You remember that I defined an atomic proposition as one which contains a single verb. Now there are two different lines of complication in proceeding from these to more complex propositions. There is the line that I have just been talking about, where you proceed to molecular propositions, and there is another line which I shall come to in a later lecture, where you have not two related propositions, but one proposition containing two or more verbs. Examples are got from believing, wishing, and so forth. "I believe Socrates is mortal." You have there two verbs, "believe" and "is." Or "I wish I were immortal." Anything like that where you have a wish or a belief or a doubt involves two verbs. A lot of psychological attitudes involve two verbs, not, as it were, crystallized out, but two verbs within the one unitary proposition. But I am talking to-day about molecular propositions, and you will understand that you can make propositions with "or" and "and" and so forth, where the constituent propositions are not atomic, but for the moment we can confine ourselves to the case where the constituent propositions are atomic. When you take an atomic proposition, or one of these propositions like "believing," when you take any proposition of that sort, there is just one fact which is pointed to by the proposition, pointed to either truly or falsely. The essence of a proposition is that it can correspond in two ways with a fact, in what one may call the true way or the false way. You might illustrate it in a picture like this:



Supposing you have the proposition "Socrates is mortal," either there would be the fact that Socrates is mortal or

there would be the fact that Socrates is not mortal. In the one case it corresponds in a way that makes the proposition true, in the other case in a way that makes the proposition false. That is one way in which a proposition differs from a name.

There are, of course, two propositions corresponding to every fact, one true and one false. There are no false facts, so you cannot get one fact for every proposition but only for every pair of propositions. All that applies to atomic propositions. But when you take such a proposition as " p or q ," "Socrates is mortal or Socrates is living still," there you will have two different facts involved in the truth or the falsehood of your proposition " p or q ." There will be the fact that corresponds to p and there will be the fact that corresponds to q , and both of those facts are relevant in discovering the truth or falsehood of " p or q ." I do not suppose there is in the world a single disjunctive fact corresponding to " p or q ." It does not look plausible that in the actual objective world there are facts going about which you could describe as " p or q ," but I would not lay too much stress on what strikes one as plausible: it is not a thing you can rely on altogether. For the present I do not think any difficulties will arise from the supposition that the truth or falsehood of this proposition " p or q " does not depend upon a single objective fact which is disjunctive but depends on the two facts one of which corresponds to p and the other to q : p will have a fact corresponding to it and q will have a fact corresponding to it. That is to say, the truth or falsehood of this proposition " p or q " depends upon two facts and not upon one, as p does and as q does. Generally speaking, as regards these things that you make up out of two propositions, the whole of what is necessary in order to know their meaning is to know under what circumstances they are true, given

the truth or falsehood of p and the truth or falsehood of q . That is perfectly obvious. You have as a schema,

for " p or q ," using "TT" for " p and q both true"
 "TF" for " p true and q false," etc.,

TT	TF	FT	FF
T	T	T	F

where the bottom line states the truth or the falsehood of " p or q ." You must not look about the real world for an object which you can call "or," and say, "Now, look at this. This is 'or.'" There is no such thing, and if you try to analyze " p or q " in that way you will get into trouble. But the meaning of disjunction will be entirely explained by the above schema.

I call these things truth-functions of propositions, when the truth or falsehood of the molecular proposition depends only on the truth or falsehood of the propositions that enter into it. The same applies to " p and q " and "if p then q " and " p is incompatible with q ." When I say " p is incompatible with q " I simply mean to say that they are not both true. I do not mean any more. Those sort of things are called truth-functions, and these molecular propositions that we are dealing with to-day are instances of truth-functions. If p is a proposition, the statement that "I believe p " does not depend for its truth or falsehood, simply upon the truth or falsehood of p , since I believe some but not all true propositions and some but not all false propositions.

I just want to give you a little talk about the way these truth-functions are built up. You can build up all these different sorts of truth-functions out of one source, namely " p is incompatible with q ," meaning by that that they are not both true, that one at least of them is false.

We will denote " p is incompatible with q " by p/q .

Take for instance p/p , i. e., “ p is incompatible with itself.” In that case clearly p will be false, so that you can take “ p/p ” as meaning “ p is false” i. e., $p/p = \text{not } p$. The meaning of molecular propositions is entirely determined by their truth-schema and there is nothing more in it than that, so that when you have got two things of the same truth-schema you can identify them.

Suppose you want “if p then q ,” that simply means that you cannot have p without having q , so that p is incompatible with the falsehood of q . Thus,

$$\text{“If } p \text{ then } q \text{”} = p/(q/q).$$

When you have that, it follows of course at once that if p is true, q is true, because you cannot have p true and q false.

Suppose you want “ p or q ,” that means that the falsehood of p is incompatible with the falsehood of q . If p is false, q is not false, and *vice versa*. That will be

$$(p/p)/(q/q).$$

Suppose you want “ p and q are both true.” That will mean that p is not incompatible with q . When p and q are both true, it is not the case that at least one of them is false. Thus,

$$\text{“}p \text{ and } q \text{ are both true”} = (p/q)/(p/q).$$

The whole of the logic of deduction is concerned simply with complications and developments of this idea. This idea of incompatibility was first shown to be sufficient for the purpose by Mr. Sheffer, and there was a good deal of work done subsequently by M. Nicod. It is a good deal simpler when it is done this way than when it is done in the way of *Principia Mathematica*, where there are two primitive ideas to start with, namely “or” and “not.” Here you can get on with only a single premise for deduction.

I will not develop this subject further because it takes you right into mathematical logic.

I do not see any reason to suppose that there is a complexity in the facts corresponding to these molecular propositions, because, as I was saying, the correspondence of a molecular proposition with facts is of a different sort from the correspondence of an atomic proposition with a fact. There is one special point that has to be gone into in connection with this, that is the question: Are there negative facts? Are there such facts as you might call the fact that "Socrates is not alive"? I have assumed in all that I have said hitherto that there are negative facts, that for example if you say "Socrates is alive," there is corresponding to that proposition in the real world the fact that Socrates is not alive. One has a certain repugnance to negative facts, the same sort of feeling that makes you wish not to have a fact " p or q " going about the world. You have a feeling that there are only positive facts, and that negative propositions have somehow or other got to be expressions of positive facts. When I was lecturing on this subject at Harvard I argued that there were negative facts, and it nearly produced a riot: the class would not hear of there being negative facts at all. I am still inclined to think that there are. However, one of the men to whom I was lecturing at Harvard, Mr. Demos, subsequently wrote an article in *Mind* to explain why there are no negative facts. It is in *Mind* for April 1917. I think he makes as good a case as can be made for the view that there are no negative facts. It is a difficult question. I really only ask that you should not dogmatize. I do not say positively that there are, but there may be.

There are certain things you can notice about negative propositions. Mr. Demos points out, first of all, that a negative proposition is not in any way dependent on a cognitive subject for its definition. To this I agree. Sup-

pose you say, when I say "Socrates is not alive," I am merely expressing disbelief in the proposition that Socrates is alive. You have got to find something or other in the real world to make this disbelief true, and the only question is what. That is his first point.

His second is that a negative proposition must not be taken at its face value. You cannot, he says, regard the statement "Socrates is not alive" as being an expression of a fact in the same sort of direct way in which "Socrates is human" would be an expression of a fact. His argument for that is solely that he cannot believe that there are negative facts in the world. He maintains that there cannot be in the real world such facts as "Socrates is not alive," taken, i. e., as simple facts, and that therefore you have got to find some explanation of negative propositions, some interpretation, and that they cannot be just as simple as positive propositions. I shall come back to that point, but on this I do not feel inclined to agree.

His third point I do not entirely agree with: that when the word "not" occurs, it cannot be taken as a qualification of the predicate. For instance, if you say that "This is not red," you might attempt to say that "not-red" is a predicate, but that of course won't do; in the first place because a great many propositions are not expressions of predicates; in the second place because the word "not" applies to the whole proposition. The proper expression would be "not: this is red"; the "not" applies to the whole proposition "this is red," and of course in many cases you can see that quite clearly. If you take a case I took in discussing descriptions: "The present king of France is not bald." If you take "not-bald" as a predicate, that would have to be judged false on the ground that there is not a present king of France. But it is clear that the proposition "The present king of France is bald" is a false proposition, and therefore the negative of that will have to be a true

proposition, and that could not be the case if you take "not-bald" as a predicate, so that in all cases where a "not" comes in, the "not" has to be taken to apply to the whole proposition. "Not- p " is the proper formula.

We have come now to the question, how are we really to interpret "not- p ," and the suggestion offered by Mr. Demos is that when we assert "not- p " we are really asserting that there is some proposition q which is true and is incompatible with p ("an opposite of p " is his phrase, but I think the meaning is the same). That is his suggested definition:

"not- p " means "There is a proposition q which is
true and is incompatible with p ."

As, e. g., if I say "This chalk is not red," I shall be meaning to assert that there is some proposition, which in this case would be the proposition "This chalk is white," which is inconsistent with the proposition "It is red," and that you use these general negative forms because you do not happen to know what the actual proposition is that is true and is incompatible with p . Or, of course, you may possibly know what the actual proposition is, but you may be more interested in the fact that p is false than you are in the particular example which makes it false. As, for instance, you might be anxious to prove that some one is a liar, and you might be very much interested in the falsehood of some proposition which he had asserted. You might also be more interested in the general proposition than in the particular case, so that if some one had asserted that that chalk was red, you might be more interested in the fact that it was not red than in the fact that it was white.

I find it very difficult to believe that theory of falsehood. You will observe that in the first place there is this objection, that it makes incompatibility fundamental and an ob-

jective fact, which is not so very much simpler than allowing negative facts. You have got to have here "That p is incompatible with q " in order to reduce "not" to incompatibility, because this has got to be the corresponding fact. It is perfectly clear, whatever may be the interpretation of "not," that there is *some* interpretation which will give you a fact. If I say "There is not a hippopotamus in this room," it is quite clear there is some way of interpreting that statement according to which there is a corresponding fact, and the fact cannot be merely that every part of this room is filled up with something that is not a hippopotamus. You would come back to the necessity for some kind or other of fact of the sort that we have been trying to avoid. We have been trying to avoid both negative facts and molecular facts, and all that this succeeds in doing is to substitute molecular facts for negative facts, and I do not consider that that is very successful as a means of avoiding paradox, especially when you consider this, that even if incompatibility is to be taken as a sort of fundamental expression of fact, incompatibility is not between facts but between propositions. If I say " p is incompatible with q ," one at least of p and q has got to be false. It is clear that no two *facts* are incompatible. The incompatibility holds between the propositions, between the p and the q , and therefore if you are going to take incompatibility as a fundamental fact, you have got, in explaining negatives, to take as your fundamental fact something involving propositions as opposed to facts. It is quite clear that propositions are not what you might call "real." If you were making an inventory of the world, propositions would not come in. Facts would, beliefs, wishes, wills would, but propositions would not. They do not have being independently, so that this incompatibility of propositions taken as an ultimate fact of the real world will want a great deal of treatment, a lot of dressing up before it will do. There-

fore as a simplification to avoid negative facts, I do not think it really is very successful. I think you will find that it is simpler to take negative facts as facts, to assume that "Socrates is not alive" is really an objective fact in the same sense in which "Socrates is human" is a fact. This theory of Mr. Demos's that I have been setting forth here is a development of the one one hits upon at once when one tries to get round negative facts, but for the reasons that I have given, I do not think it really answers to take things that way, and I think you will find that it is better to take negative facts as ultimate. Otherwise you will find it so difficult to say what it is that corresponds to a proposition. When, e. g., you have a false positive proposition, say "Socrates is alive," it is false because of a fact in the real world. A thing cannot be false except because of a fact, so that you find it extremely difficult to say what exactly happens when you make a positive assertion that is false, unless you are going to admit negative facts. I think all those questions are difficult and there are arguments always to be adduced both ways, but on the whole I do incline to believe that there are negative facts and that there are not disjunctive facts. But the denial of disjunctive facts leads to certain difficulties which we shall have to consider in connection with general propositions in a later lecture.

DISCUSSION.

..... Do you consider that the proposition "Socrates is dead" is a positive or a negative fact?

Mr. Russell: It is partly a negative fact. To say that a person is dead is complicated. It is two statements rolled into one: "Socrates was alive" and "Socrates is not alive."

..... Does putting the "not" into it give it a formal character of negative and vice versa?

Mr. Russell: No, I think you must go into the meaning of words.

..... I should have thought there was a great difference between saying that "Socrates is alive" and saying that "Socrates is not a living man." I think it is possible to have what one might call a negative existence and that things exist of which we cannot take cognizance. Socrates undoubtedly did live but he is no longer in the condition of living as a man.

Mr. Russell: I was not going into the question of existence after death but simply taking words in their every-day signification. What is precisely your test as to whether you have got a positive or negative proposition before you?

Mr. Russell: There is no formal test.

..... If you had a formal test, would it not follow that you would know whether there were negative facts or not?

Mr. Russell: No, I think not. In the perfect logical language that I sketched in theory, it would always be obvious at once whether a proposition was positive or negative. But it would not bear upon how you are going to interpret negative propositions.

..... Would the existence of negative facts ever be anything more than a mere definition?

Mr. Russell: Yes, I think it would. It seems to me that the business of metaphysics is to describe the world, and it is in my opinion a real definite question whether in a complete description of the world you would have to mention negative facts or not.

..... How do you define a negative fact?

Mr. Russell: You could not give a general definition if it is right that negativity is an ultimate.

IV. PROPOSITIONS AND FACTS WITH MORE THAN ONE VERB; BELIEFS, ETC.

You will remember that after speaking about atomic propositions I pointed out two more complicated forms of propositions which arise immediately on proceeding further than that: the first, which I call molecular propositions, which I dealt with last time, involving such words as "or," "and," "if," and the second involving two or more verbs such as believing, wishing, willing, and so forth.

In the case of molecular propositions it was not clear that we had to deal with any new form of fact, but only with a new form of proposition, i. e., if you have a disjunctive proposition such as " p or q " it does not seem very plausible to say that there is in the world a disjunctive fact corresponding to " p or q " but merely that there is a fact corresponding to p and a fact corresponding to q , and the disjunctive proposition derives its truth or falsehood from those two separate facts. Therefore in that case one was dealing only with a new form of proposition and not with a new form of fact. To-day we have to deal with a new form of fact.

I think one might describe philosophical logic, the philosophical portion of logic which is the portion that I am concerned with in these lectures since Christmas [1917], as an inventory, or if you like a more humble word, a "Zoo" containing all the different forms that facts may have. I should prefer to say "forms of facts" rather than "forms of propositions." To apply that to the case of molecular propositions which I dealt with last time, if one were pursuing this analysis of the forms of facts, it would be *belief in* a molecular proposition that one would deal with rather than the molecular proposition itself. In accordance with the sort of realistic bias that I should put into all study of metaphysics, I should always wish to be engaged in the investigation of some actual fact or set of facts, and it seems to me that that is so in logic just as much as it is in zoology. In logic you are concerned with the forms of facts, with getting hold of the different sorts of facts, different *logical* sorts of facts, that there are in the world. Now I want to point out to-day that the facts that occur when one believes or wishes or wills have a different logical form from the atomic facts containing a single verb which I dealt with in my second lecture. (There are, of course, a good many forms that facts may have,

a strictly infinite number, and I do not wish you to suppose that I pretend to deal with all of them.) Suppose you take any actual occurrence of a belief. I want you to understand that I am not talking about beliefs in the sort of way in which judgment is spoken of in theory of knowledge, in which you would say there is *the* judgment that two and two are four. I am talking of the actual occurrence of a belief in a particular person's mind at a particular moment, and discussing what sort of a fact that is. If I say "What day of the week is this?" and you say "Tuesday," there occurs in your mind at that moment the belief that this is Tuesday. The thing I want to deal with to-day is the question, What is the form of the fact which occurs when a person has a belief. Of course you see that the sort of obvious first notion that one would naturally arrive at would be that a belief is a relation to the proposition. "I believe the proposition p ." "I believe that to-day is Tuesday." "I believe that two and two are four." Something like that. It seems on the face of it as if you had there a relation of the believing subject to a proposition. That view won't do for various reasons which I shall go into. But you have therefore got to have a theory of belief which is not exactly that. Take any sort of proposition, say "I believe Socrates is mortal." Suppose that that belief does actually occur. The statement that it occurs is a statement of fact. You have there two verbs. You may have more than two verbs, you may have any number greater than one. I may believe that Jones is of opinion that Socrates is mortal. There you have more than two verbs. You may have any number, but you cannot have less than two. You will perceive that it is not only the proposition that has the two verbs, but also the fact, which is expressed by the proposition, has two constituents corresponding to verbs. I shall call those constituents verbs

for the sake of shortness, as it is very difficult to find any word to describe all those objects which one denotes by verbs. Of course, that is strictly using the word "verb" in two different senses, but I do not think it can lead to any confusion if you understand that it is being so used. This fact (the belief) is one fact. It is not like what you had in molecular propositions where you had (say) " p or q ." It is just one single fact that you have a belief. That is obvious from the fact that you can believe a falsehood. It is obvious from the fact of false belief that you cannot cut off one part: you cannot have

I believe/Socrates is mortal.

There are certain questions that arise about such facts, and the first that arises is, Are they undeniable facts or can you reduce them in some way to relations of other facts? Is it really necessary to suppose that there are irreducible facts, of which that sort of thing is a verbal expression? On that question until fairly lately I should certainly not have supposed that any doubt could arise. It had not really seemed to me until fairly lately that that was a debatable point. I still believe that there are facts of that form, but I see that it is a substantial question that needs to be discussed.

1. Are beliefs, etc., irreducible facts?

"Etc." covers understanding a proposition; it covers desiring, willing, any other attitude of that sort that you may think of that involves a proposition. It seems natural to say one believes a proposition and unnatural to say one desires a proposition, but as a matter of fact that is only a prejudice. What you believe and what you desire are of exactly the same nature. You may desire to get some sugar to-morrow and of course you may possibly believe that you will. I am not sure that the logical form is the

same in the case of will. I am inclined to think that the case of will is more analogous to that of perception, in going direct to facts, and excluding the possibility of falsehood. In any case desire and belief are of exactly the same form logically.

Pragmatists and some of the American realists, the school whom one calls neutral monists, deny altogether that there is such a phenomenon as belief in the sense I am dealing with. They do not deny it in words, they do not use the same sort of language that I am using, and that makes it difficult to compare their views with the views I am speaking about. One has really to translate what they say into language more or less analogous to ours before one can make out where the points of contact or difference are. If you take the works of James in his *Essays in Radical Empiricism* or Dewey in his *Essays in Experimental Logic* you will find that they are denying altogether that there is such a phenomenon as belief in the sense I am talking of. They use the word "believe" but they mean something different. You come to the view called "behaviorism," according to which you mean, if you say a person believes a thing, that he behaves in a certain fashion; and that hangs together with James's pragmatism. James and Dewey would say: when I believe a proposition, that means that I act in a certain fashion, that my behavior has certain characteristics, and my belief is a true one if the behavior leads to the desired result and is a false one if it does not. That, if it is true, makes their pragmatism a perfectly rational account of truth and falsehood, if you do accept their view that belief as an isolated phenomenon does not occur. That is therefore the first thing one has to consider. It would take me too far from logic to consider that subject as it deserves to be considered, because it is a subject belonging to psychology, and it is only rele-

vant to logic in this one way that it raises a doubt whether there are any facts having the logical form that I am speaking of. In the question of this logical form that involves two or more verbs you have a curious interlacing of logic with empirical studies, and of course that may occur elsewhere, in this way, that an empirical study gives you an example of a thing having a certain logical form, and you cannot really be sure that there are things having a given logical form except by finding an example, and the finding of an example is itself empirical. Therefore in that way empirical facts are relevant to logic at certain points. I think theoretically one might know that there were those forms without knowing any instance of them, but practically, situated as we are, that does not seem to occur. Practically, unless you can find an example of the form you won't know that there is that form. If I cannot find an example containing two or more verbs, you will not have reason to believe in the theory that such a form occurs.

When you read the works of people like James and Dewey on the subject of belief, one thing that strikes you at once is that the sort of thing they are thinking of as the object of belief is quite different from the sort of thing I am thinking of. They think of it always as a thing. They think you believe in God or Homer: you believe in an object. That is the picture they have in their minds. It is common enough, in common parlance, to talk that way, and they would say, the first crude approximation that they would suggest would be that you believe truly when there is such an object and that you believe falsely when there is not. I do not mean they would say that exactly, but that would be the crude view from which they would start. They do not seem to have grasped the fact that the objective side in belief is better expressed by a proposition than by a single word, and that, I think, has a great deal to do

with their whole outlook on the matter of what belief consists of. The object of belief in their view is generally, not relations between things, or things having qualities, or what not, but just single things which may or may not exist. That view seems to me radically and absolutely mistaken. In the first place there are a great many judgments you cannot possibly fit into that scheme, and in the second place it cannot possibly give any explanation to false beliefs, because when you believe that a thing exists and it does not exist, the thing is not there, it is nothing, and it cannot be the right analysis of a false belief to regard it as a relation to what is really nothing. This is an objection to supposing that belief consists simply in relation to the object. It is obvious that if you say "I believe in Homer" and there was no such person as Homer, your belief cannot be a relation to Homer, since there is no "Homer." Every fact that occurs in the world must be composed entirely of constituents that there are, and not of constituents that there are not. Therefore when you say "I believe in Homer" it cannot be the right analysis of the thing to put it like that. What the right analysis is I shall come on to in the theory of descriptions. I come back now to the theory of behaviorism which I spoke of a moment ago. Suppose, e. g., that you are said to believe that there is a train at 10.25. This means, we are told, that you start for the station at a certain time. When you reach the station you see it is 10.24 and you run. That behavior constitutes your belief that there is a train at that time. If you catch your train by running, your belief was true. If the train went at 10.23, you miss it, and your belief was false. That is the sort of thing that they would say constitutes belief. There is not a single state of mind which consists in contemplating this eternal verity, that the train starts at 10.25. They would apply that even to the most abstract things. I do not myself feel that that view of things is tenable.

It is a difficult one to refute because it goes very deep and one has the feeling that perhaps, if one thought it out long enough and became sufficiently aware of all its implications, one might find after all that it was a feasible view; but yet I do not *feel* it feasible. It hangs together, of course, with the theory of neutral monism, with the theory that the material constituting the mental is the same as the material constituting the physical, just like the Post Office directory which gives you people arranged geographically and alphabetically. This whole theory hangs together with that. I do not mean necessarily that all the people that profess the one profess the other, but that the two do essentially belong together. If you are going to take that view, you have to explain away belief and desire, because things of that sort do seem to be mental phenomena. They do seem rather far removed from the sort of thing that happens in the physical world. Therefore people will set to work to explain away such things as belief, and reduce them to bodily behavior; and your belief in a certain proposition will consist in the behavior of your body. In the crudest terms that is what that view amounts to. It does enable you to get on very well without mind. Truth and falsehood in that case consist in the relation of your bodily behavior to a certain fact, the sort of distant fact which is the purpose of your behavior, as it were, and when your behavior is satisfactory in regard to that fact your belief is true, and when your behavior is unsatisfactory in regard to that fact your belief is false. The logical essence, in that view, will be a relation between two facts having the same sort of form as a causal relation, i. e., on the one hand there will be your bodily behavior which is one fact, and on the other hand the fact that the train starts at such and such a time, which is another fact, and out of a relation of those two the whole phenomenon is constituted. The thing you will get will be logically of the same form

as you have in cause, where you have "This fact causes that fact." It is quite a different logical form from the facts containing two verbs that I am talking of to-day.

I have naturally a bias in favor of the theory of neutral monism because it exemplifies Occam's razor. I always wish to get on in philosophy with the smallest possible apparatus, partly because it diminishes the risk of error, because it is not necessary to deny the entities you do not assert, and therefore you run less risk of error the fewer entities you assume. The other reason—perhaps a somewhat frivolous one—is that every diminution in the number of entities increases the amount of work for mathematical logic to do in building up things that look like the entities you used to assume. Therefore the whole theory of neutral monism is pleasing to me, but I do find so far very great difficulty in believing it. You will find a discussion of the whole question in some articles I wrote in *The Monist*, especially in July 1914, and in the two previous numbers also. I should really want to rewrite them rather because I think some of the arguments I used against neutral monism are not valid. I place most reliance on the argument about "emphatic particulars," "this," "I," all that class of words, that pick out certain particulars from the universe by their relation to oneself, and I think by the fact that they, or particulars related to them, are present to you at the moment of speaking. "This," of course, is what I call an "emphatic particular." It is simply a proper name for the present object of attention, a proper name, meaning nothing. It is ambiguous, because, of course, the object of attention is always changing from moment to moment and from person to person. I think it is extremely difficult, if you get rid of consciousness altogether, to explain what you mean by such a word as "this," what it is that makes the absence of impartiality. You would say that in a purely physical world there would be a complete impar-

tiality. All parts of time and all regions of space would seem equally emphatic. But what really happens is that we pick out certain facts, past and future and all that sort of thing; they all radiate out from "this," and I have not myself seen how one can deal with the notion of "this" on the basis of neutral monism. I do not lay that down dogmatically, only I do not see how it can be done. I shall assume for the rest of this lecture that there are such facts as beliefs and wishes and so forth. It would take me really the whole of my course to go into the question fully. Thus we come back to more purely logical questions from this excursion into psychology, for which I apologize.

2. *What is the status of p in "I believe p"?*

You cannot say that you believe *facts*, because your beliefs are sometimes wrong. You can say that you *perceive* facts, because perceiving is not liable to error. Whenever it is facts alone that are involved, error is impossible. Therefore you cannot say you believe facts. You have to say that you believe propositions. The awkwardness of that is that obviously propositions are nothing*. Therefore that cannot be the true account of the matter. When I say "Obviously propositions are nothing" it is not perhaps quite obvious. Time was when I thought there were propositions, but it does not seem to me very plausible to say that in addition to facts there are also these curious shadowy things going about such as "That to-day is Wednesday" when in fact it is Tuesday. I cannot believe they go about the real world. It is more than one can manage to believe, and I do think no person with a vivid sense of reality can imagine it. One of the difficulties of the study of logic is that it is an exceedingly abstract study dealing with the most abstract things imaginable, and yet you cannot pursue it properly unless you have a vivid instinct as to what is real. You must have that instinct rather well developed in logic.

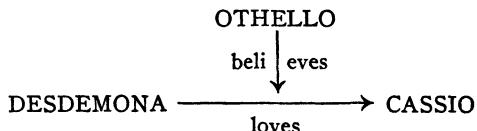
I think otherwise you will get into fantastic things. I think Meinong is rather deficient in just that instinct for reality. Meinong maintains that there is such an object as the round square only it does not exist, and it does not even subsist, but nevertheless there is such an object, and when you say "The round square is a fiction," he takes it that there is an object "the round square" and there is a predicate "fiction." No one with a sense of reality would so analyze that proposition. He would see that the proposition wants analyzing in such a way that you won't have to regard the round square as a constituent of that proposition. To suppose that in the actual world of nature there is a whole set of false propositions going about is to my mind monstrous. I cannot bring myself to suppose it. I cannot believe that they are there in the sense in which facts are there. There seems to me something about the fact that "To-day is Tuesday" on a different level of reality from the supposition "That to-day is Wednesday." When I speak of the proposition "That to-day is Wednesday" I do not mean the occurrence in future of a state of mind in which you think it is Wednesday, but I am talking about the theory that there is something quite logical, something not involving mind in any way; and such a thing as that I do not think you can take a false proposition to be. I think a false proposition must, wherever it occurs, be subject to analysis, be taken to pieces, pulled to bits, and shown to be simply separate pieces of one fact in which the false proposition has been analyzed away. I say that simply on the ground of what I should call an instinct of reality. I ought to say a word or two about "reality." It is a vague word, and most of its uses are improper. When I talk about reality as I am now doing, I can explain best what I mean by saying that I mean everything you would have to mention in a complete description of the world; that will convey to you what I mean. Now I do not think that false propositions would

have to be mentioned in a complete description of the world. False beliefs would, of course, false suppositions would, and desires for what does not come to pass, but not false propositions all alone, and therefore when you, as one says, believe a false proposition, that cannot be an accurate account of what occurs. It is not accurate to say "I believe the proposition p " and regard the occurrence as a twofold relation between me and p . The logical form is just the same whether you believe a false or a true proposition. Therefore in all cases you are not to regard belief as a two-term relation between yourself and a proposition, and you have to analyze up the proposition and treat your belief differently. Therefore the belief does not really contain a proposition as a constituent but only contains the constituents of the proposition as constituents. You cannot say when you believe, "What is it that you believe?" There is no answer to that question, i. e., there is not a single thing that you are believing. "I believe that to-day is Tuesday." You must not suppose that "That to-day is Tuesday" is a single object which I am believing. That would be an error. That is not the right way to analyze the occurrence, although that analysis is linguistically convenient, and one may keep it provided one knows that it is not the truth.

3. How shall we describe the logical form of a belief?

I want to try to get an account of the way that a belief is made up. That is not an easy question at all. You cannot make what I should call a map-in-space of a belief. You can make a map of an atomic fact but not of a belief, for the simple reason that space-relations always are of the atomic sort or complications of the atomic sort. I will try to illustrate what I mean. The point is in connection with there being two verbs in the judgment and with the fact that both verbs have got to occur as verbs, because if a

thing is a verb it cannot occur otherwise than as a verb. Suppose I take "A believes that B loves C." "Othello believes that Desdemona loves Cassio." There you have a false belief. You have this odd state of affairs that the verb "loves" occurs in that proposition and seems to occur as relating Desdemona to Cassio whereas in fact it does not do so, but yet it does occur as a verb, it does occur in the sort of way that a verb should do. I mean that when A believes that B loves C, you have to have a verb in the place where "loves" occurs. You cannot put a substantive in its place. Therefore it is clear that the subordinate verb (i. e., the verb other than believing) is functioning as a verb, and seems to be relating two terms, but as a matter of fact does not when a judgment happens to be false. That is what constitutes the puzzle about the nature of belief. You will notice that wherever one gets to really close quarters with the theory of error one has the puzzle of how to deal with error without assuming the existence of the non-existent. I mean that every theory of error sooner or later wrecks itself by assuming the existence of the non-existent. As when I say "Desdemona loves Cassio," it seems as if you have a non-existent love between Desdemona and Cassio, but that is just as wrong as a non-existent unicorn. So you have to explain the whole theory of judgment in some other way. I come now to this question of a map. Suppose you try such a map as this:



This question of making a map is not so strange as you might suppose because it is part of the whole theory of symbolism. It is important to realize where and how a symbolism of that sort would be wrong: where and how

it is wrong is that in the symbol you have this relationship relating these two things and in the fact it doesn't really relate them. You cannot get in space any occurrence which is logically of the same form as belief. When I say "logically of the same form" I mean that one can be obtained from the other by replacing the constituents of the one by the new terms. If I say "Desdemona loves Cassio" that is of the same form as "A is to the right of B." Those are of the same form, and I say that nothing that occurs in space is of the same form as belief. I have got on here to a new sort of thing, a new beast for our Zoo, not another member of our former species but a new species. The discovery of this fact is due to Mr. Wittgenstein.

There is a great deal that is odd about belief from a logical point of view. One of the things that are odd is that you can believe propositions of all sorts of forms. I can believe that "This is white" and that "Two and two are four." They are quite different forms, yet one can believe both. The actual occurrence can hardly be of exactly the same logical form in those two cases because of the great difference in the forms of the propositions believed. Therefore it would seem that belief cannot strictly be logically one in all different cases but must be distinguished according to the nature of the proposition that you believe. If you have "I believe p " and "I believe q " those two facts, if p and q are not of the same logical form, are not of the same logical form in the sense I was speaking of a moment ago, that is in the sense that from "I believe p " you can derive "I believe q " by replacing the constituents of one by the constituents of the other. That means that belief itself cannot be treated as being a proper sort of single term. Belief will really have to have different logical forms according to the nature of what is believed. So that the apparent sameness of believing in different cases is more or less illusory.

There are really two main things that one wants to notice in this matter that I am treating of just now. The first is the impossibility of treating the proposition believed as an independent entity, entering as a unit into the occurrence of the belief, and the other is the impossibility of putting the subordinate verb on a level with its terms as an object term in the belief. That is a point in which I think that the theory of judgment which I set forth once in print some years ago was a little unduly simple, because I did then treat the object verb as if one could put it as just an object like the terms, as if one could put "loves" on a level with Desdemona and Cassio as a term for the relation "believe." That is why I have been laying such an emphasis in this lecture to-day on the fact that there are two verbs at least. I hope you will forgive the fact that so much of what I say to-day is tentative and consists of pointing out difficulties. The subject is not very easy and it has not been much dealt with or discussed. Practically nobody has until quite lately begun to consider the problem of the nature of belief with anything like a proper logical apparatus and therefore one has very little to help one in any discussion and so one has to be content on many points at present with pointing out difficulties rather than laying down quite clear solutions.

4 The question of nomenclature.

What sort of name shall we give to verbs like "believe" and "wish" and so forth? I should be inclined to call them "propositional verbs." This is merely a suggested name for convenience, because they are verbs which have the *form* of relating an object to a proposition. As I have been explaining, that is not what they really do, but it is convenient to call them propositional verbs. Of course you might call them "attitudes," but I should not like that because it is a psychological term, and although all the

instances in our experience are psychological, there is no reason to suppose that all the verbs I am talking of are psychological. There is never any reason to suppose that sort of thing. One should always remember Spinoza's infinite attributes of Deity. It is quite likely that there are in the world the analogues of his infinite attributes. We have no acquaintance with them, but there is no reason to suppose that the mental and the physical exhaust the whole universe, so one can never say that all the instances of any logical sort of thing are of such and such a nature which is not a logical nature: you do not know enough about the world for that. Therefore I should not suggest that all the verbs that have the form exemplified by believing and willing are psychological. I can only say all I know are.

I notice that in my syllabus I said I was going to deal with truth and falsehood to-day, but there is not much to say about them specifically as they are coming in all the time. The thing one first thinks of as true or false is a proposition, and a proposition is nothing. But a belief is true or false in the same way as a proposition is, so that you do have facts in the world that are true or false. I said a while back that there was no distinction of true and false among facts, but as regards that special class of facts that we call "beliefs," there is, in that sense that a belief which occurs may be true or false, though it is equally a fact in either case. One *might* call wishes false in the same sense when one wishes something that does not happen. The truth or falsehood depends upon the proposition that enters in. I am inclined to think that perception, as opposed to belief, does go straight to the fact and not through the proposition. When you perceive the fact you do not, of course, have error coming in, because the moment it is a fact that is your object error is excluded. I think that verification in the last resort would always reduce itself to the perception of facts. Therefore the logical form of

perception will be different from the logical form of believing, just because of that circumstance that it is a *fact* that comes in. That raises also a number of logical difficulties which I do not propose to go into, but I think you can see for yourself that perceiving would also involve two verbs just as believing does. I am inclined to think that volition differs from desire logically, in a way strictly analogous to that in which perception differs from belief. But it would take us too far from logic to discuss this view.

[TO BE CONTINUED.]

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